

AF Combat ID

Enterprise Integration Team

America's Air Force - No One Comes Close



U.S. AIR FORCE

**Cooperative IFF
Mark XII A, Mode 5/S**

AF Acquisition Roadmap

Industry Day

**ESC/SRC
PM: Steve Lewis
2 Mar 04**



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Mode 5 Major Players

Coordination to deliver acquisition and fielding roadmap



- ESC/SR (Combat ID), ESC/GA (GATM), ESC/AW (AWACs), ESC/NI7 (Security Products), ESC/NI4 (J TRS AMF), and ESC/CX (Gap Analysis), ESC/AC (Ground C2)
- DoD AIMS PO (IFF Certification and Standards Office)
- Cryptologic Systems Group - Crypto Modernization
- NAVAIR PMA 213 (Mode 5 lead service agency)
- SAF/AQID/AQII, AF/XORC/XOR-GANS, AF/XIC
- Air Land Sea Application Center
- National Security Agency
- National Air Intel Center
- Joint Spectrum Center
- ACC/IN/DR/DO/SC/XP
- AFC2ISRC/A-61/2/3
- ASC/AA, ASC/FBX
- AF Comm Agency
- WR-ALC/LY
- AMC/DO/XP
- AFSOC/XP
- J TRS J PO





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AF Mode S/5 Overview



- **USAF User Requirement**
 - Mode S - Prioritize platforms based on immediate need
 - EUCONTROL Mandates
 - Mode S ELS Mar 2005
 - Mode S EHS Mar 2007
 - Mode 5 - need revalidated
 - Field FY08-FY15 timeframe
 - J ROC app'd Navy ORD Apr 01
- **SAF Acquisition Executive**
 - Approved IFF Program Plan
 - Challenged Management Team
 - Affordability
 - Creativity Throughout Implementation
 - Reduce and Control Platform Integration Costs
- **Ground Rules**
 - Deploy essential capabilities
 - Minimize A/C integration impacts
 - Deploy to meet requirement dates
- **Strategy**
 - Complete Product Development
 - Learn from US Navy and US Army
 - Leverage US Global Air Traffic Program Progress

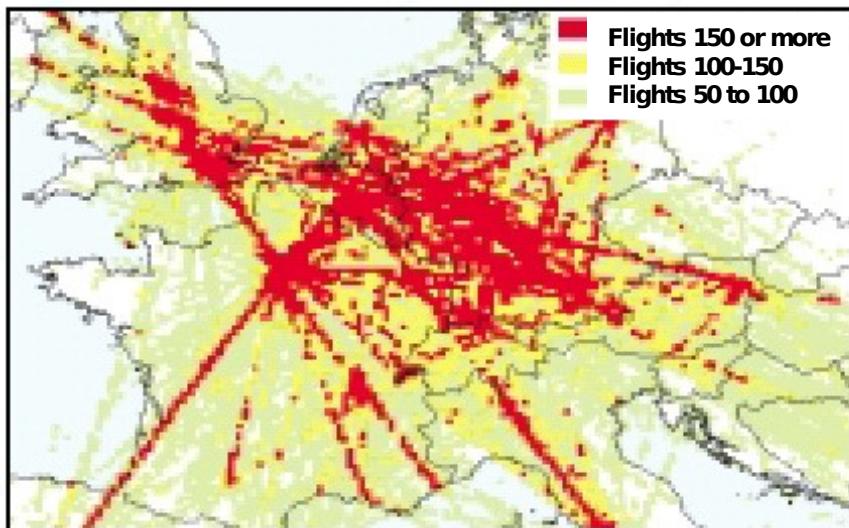


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Why Mode S

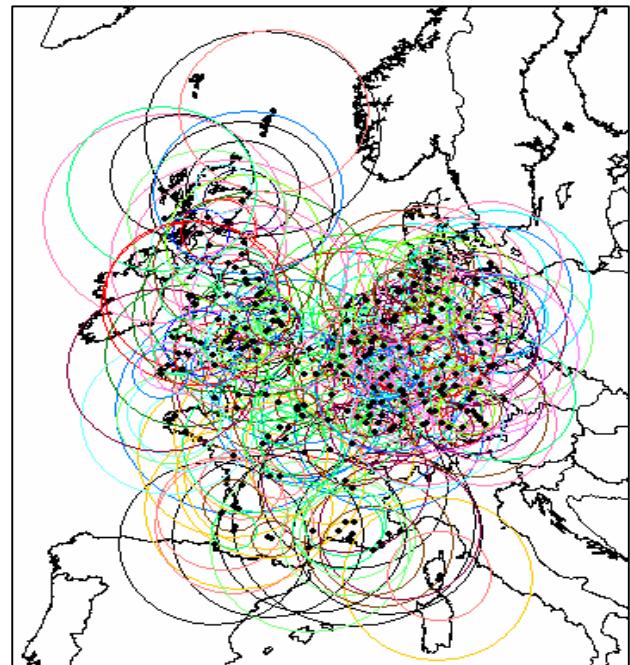


- Severe RF pollution
- Insufficient squawk codes



30 minute timeline during day

- 91 Civil Interrogators
- 167 Military Interrogators



EUROCONTROL Mandates

- Elementary Surveillance (ELS) by March 2005
- Enhanced Surveillance (EHS) by March 2007



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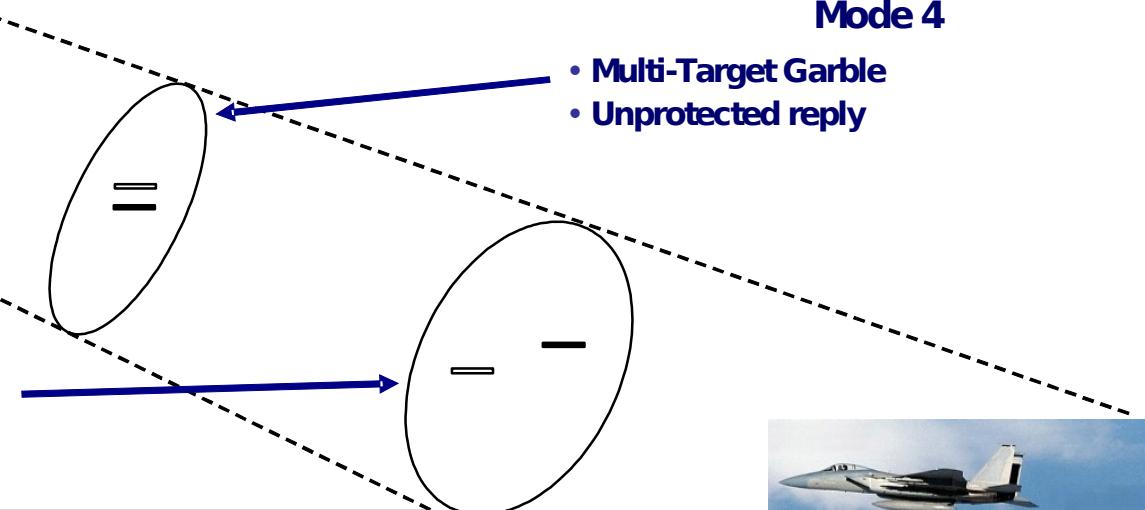
Why Mode 5

NSA Advocacy



Mode 5

- Random Reply Delay
- Lethal Interrogation



Enhanced Security

Mode 4

40-year old algorithm



New NSA - developed algorithm

24-Hour Code Validity Interval



Short Code Validity Interval

Reply Unprotected



Interrogation and Reply Protected

Mode 5

- ROC Mandate
- Allied Interoperability
- XO fielding FY08-15



SAF/AQ Moratorium Letter



14 Apr 03

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OFFICE OF THE ASSISTANT SECRETARY

DEPARTMENT OF THE AIR FORCE
WASHINGTON DC

MEMORANDUM FOR ALMAJCOM/CC
HQ USAF/RE
NGB/CF

FROM: SAF/AQ
1060 Air Force Pentagon
Washington DC 20330-1060

SUBJECT: Mark XII Identification Friend or Foe (IFF) Moratorium

APR 14 2003

This correspondence directs an Air Force-wide moratorium on the acquisition of Mark XII (Mode 4) IFF equipment (intended for the US inventory) that is not Mode 5/S Growth Ready. The JROC-approved Mark XIIA ORD (19 Mar 01), and NATO's STANAG 4193 require that future Mode 4 systems "will be designed with the flexibility to accommodate Mode S and the new wave form(s)"...Mode 5 is this "new wave form," with several improvements over Mode 4 for secure, high-confidence IFF.

While we finalize the Mode 5 acquisition strategy and fielding plan, I am placing a moratorium, coordinated with HQ USAF/XO, on the acquisition of all Mark XII IFF systems that are not Mark XIIA (Mode 5/S) growth ready. Programs currently purchasing non-growth ready spares shall begin budgeting to transition to growth-ready equipment as soon as possible. Mode 5 "growth ready" is defined as a Mark XII digital system certified by the DoD Air Traffic Control Radar Beacon System IFF/XIIA System (AIMS) Program Office (PO) for Mark XII performance, Mode S performance/growth, and Mode 5 growth (per AFPPD 63-13, transponders shall be acquired via the GATO/MC2 ID/IQ catalog). Also, all IFF cryptographic development activities must be coordinated through ESC/DIW and CPSG/ZX to ensure Cryptographic Modernization objectives and Common IFF Cryptographic Enterprise solutions are met. These actions will ensure the most efficient use of IFF funding across the Air Force now and as we prepare for the future. Exceptions to this moratorium will be reviewed on a case-by-case basis.

The AIMS PO is the OPR for qualification, standardization and certification for all IFF systems. For the latest list of AIMS PO-certified systems and certification requirements, please contact Mr. Vic Hunsicker, DSN 468-5163, (Victor.Hunsicker@robins.af.mil) or Mr. John Seereiter, DSN 468-4661, (John.Seereiter@robins.af.mil). My POC for Mode 5 actions is Major Kevin Psmithe, SAF/AQID, DSN 425-6337, (Kevin.Psmithe@pentagon.af.mil).

MARVIN R. SAMBUR
Assistant Secretary of the Air Force
(Acquisition)

...Air Force-wide moratorium on acquisition of Mk XII Mode 4 IFF... that is not Mode 5/S Growth Ready.

Current IFF acquisition transition to growth ready
GATO/MC2 ID/IQ Catalog for transponders
Exceptions... case-by-case basis.

Mode 5 "growth ready" is defined as a Mk XII digital system certified by AIMS PO for Mk XII performance, Mode S performance/growth, and Mode 5 growth...

ESC/DIW and CPSG OPR to achieve CM solutions

Questions - call AIMS PO

AIMS PO qualify, standardize, certify IFF systems



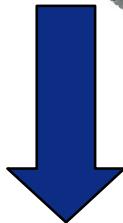
Solution to Mode S/5 Requirement



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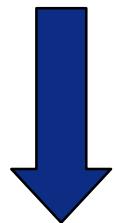
Past

Legacy IFF 1960-90



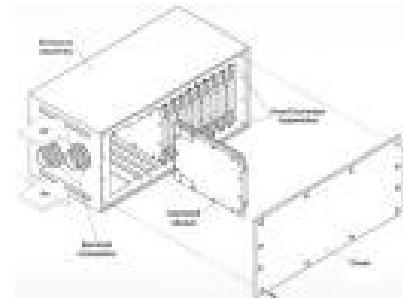
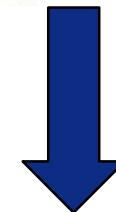
Present

Mode S COTS
with M5 growth



Future

Mode 5 RDT&E and
IFF Crypto Mod
Upgrades Mode S COTS





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Mode 5/S Acquisition Plan



- Potential Contracting Efforts
- Multiple Award Potential:
 - Air-to-Air Interrogator
 - Airborne Transponder
 - Combined Interrogator/Transponder
 - Ground Interrogator
- Working with NI7 for Crypto Procurement Actions

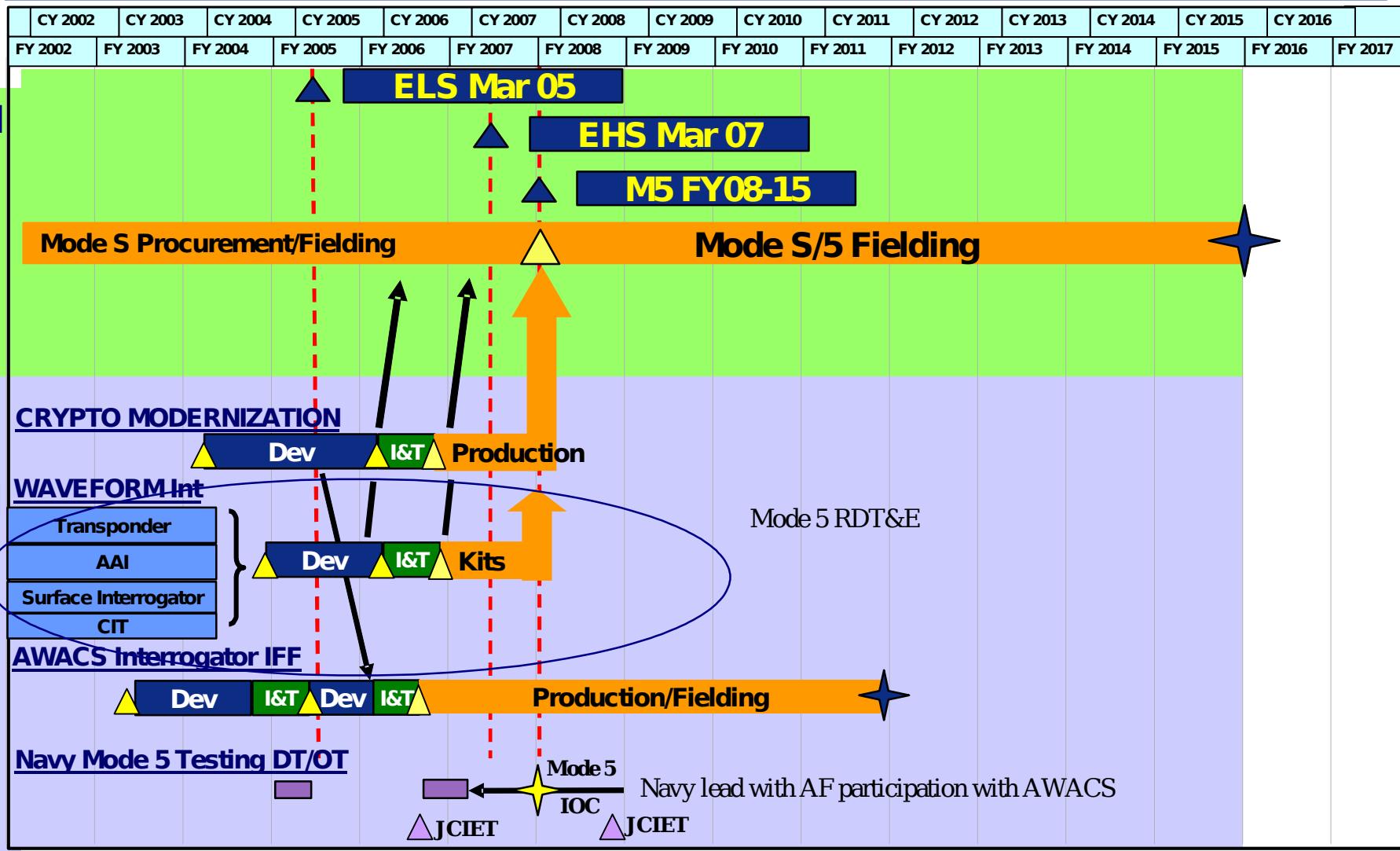
Need Your Recommendations



Mode S/5 Acquisition Roadmap



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AF/XOR Mode S Priorities



- **Priority One:** VIP/SAM

- VC-25
- C-32
- C-40
- C-37
- C-20

- **Priority Two:** Based in Core Europe

| | | | |
|----------|-------------|--------|------|
| ■ C-130 | MC-130 H/P | HH-60G | |
| ■ KC-135 | MH-53 M/J | C-20 | |
| ■ C-21 | F-16 Blk 50 | F-15 | A-10 |

- **Priority Three:** Frequently Fly in Europe

| | | | |
|----------|------|---------|-----------|
| ■ C-5 | E-3 | E-4 | AC-130 |
| ■ C-17 | E-8 | U-2 | MC-130E |
| ■ KC-135 | B-1 | RQ-4 | HC-130N/P |
| ■ KC-10 | B-2 | EC-130H | MC-130H/P |
| ■ C-130 | B-52 | F-117 | MH-53 |
| ■ RC-135 | | | |



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AF/XOR Mode S Priorities (con't)



Priority Four: Based in non-core Europe

- F-16 Block 40

Priority Five: Potential Rotators

- F-16
- A-10
- HH-60G
- F-15

Priority Six: Seldom or never in Europe/still in development

| | | |
|---------|-------|-------|
| ■ CV-22 | RQ-1 | C-12 |
| ■ F-22 | UCAV | C-38 |
| ■ F-35 | YAL-1 | UH-1N |



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AF Mode S/5 Program Plan

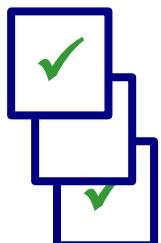
24 Nov 03 Briefing



■ SAF/AQ and AF/XO/XI Approved:



- Reprogramming FY04/05 funds for Mode S/5 (IFF crypto is fully funded)
- Develop APPG language to guide MAJ COM for FY06 POM
 - "MAJ COMs will address shortfalls in their Mode 5/S funding in accordance with the Mode 5 ORD, the European elementary Surveillance (ELS) mandate and EUROCONTROL's Jul '03 Summary of Responses to the Common Framework for the Regulation of Mode S Enhanced Surveillance."



- ESC stand up AF IFF systems program office
- Multiple awards for Mode 5 tech insertion into digital boxes
- Plan Implementation- Timely & Cost Effective
 - Mode S ELS for aircraft based in and flying frequently in Europe - COTS FY04-07
 - Mode S EHS by exception (VIP/SAM, New Production A/C, e.g. C-17, C-130J, F/A-22)
 - Mode 5 Level 1 (Level 2 for F-15, F/A-22, E-3)



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Summary



- **Appreciate Your Interest**

- **Solicit Industry Feedback**



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Questions?